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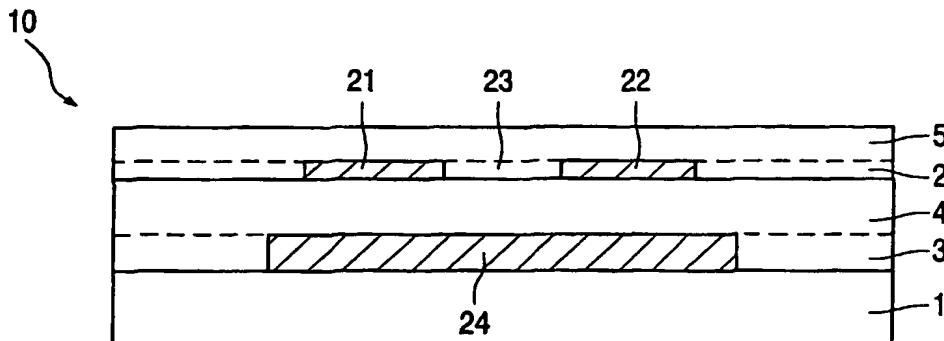
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(54) Title: ELECTRONIC DEVICE, METHOD, MONOMER AND POLYMER



(57) Abstract: The electronic device of the invention comprises one or more active elements, each comprising a first and a second electrode and an active layer of organic material separating the first and second electrodes. Examples of active elements are thin-film transistors and light-emitting diodes. The active layer comprises a polymeric material having conjugated units A and non-conjugated intermediate units B, which intermediate units B separate the conjugated units A from each other, such that no conjugation extends from a first conjugated unit A1 to a second conjugated unit A2. The polymeric material may be a polymer network, an alternating copolymer or a polymer in which the conjugated units are present in side chains. The polymer can be prepared from monomers having a B1-A1-B2 structure, wherein at least one of B1 and B2 comprises a reactive group enabling polymerization.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L51/50 H01L27/28 H01L51/30 C09K11/06 C08G61/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L C09K C08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 599 899 A (OSAHENI JOHN A ET AL) 4 February 1997 (1997-02-04) column 3, line 42 -column 4, line 5 ---	1,3,6-8
X	WO 94 15368 A (HERREMA JAN ;GILL RICHARD (NL); UNIV GRONINGEN (NL); WIERINGA REIN) 7 July 1994 (1994-07-07) abstract; figure 4 ---	1,3,5-8
X	JUNZHI YAO , DAVID Y. SON: "Hyperbranched Poly(2,5-silylthiophenes). The possibility of sigma-pi Conjugation in Three Dimensions" ORGANOMETALLICS, vol. 18, 4 September 1999 (1999-09-04), pages 1736-1740, XP002254460 page 1736, column 1, line 5 - line 8 --- -/--	1,3,4,6, 9-12



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Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 346 148 A (BROWN JOHN WILLIAM ;FOOT PETER JONATHAN SAMUEL (GB)) 2 August 2000 (2000-08-02) abstract; figure 1 ---	1,4,5
X	Y. OHSEDO, I. IMAE, Y. SHIROTA: "Synthesis and Electrochromic Properties of Methacrylate Copolymers Containing Pendant Terthiophene and Oligo(ethyleneoxide) Moieties" SYNTHETIC METALS, 'Online! vol. 102, no. 1-3, June 1999 (1999-06), pages 969-970, XP002254461 Int. Conf. on Sci. and Techn. of Synth. Met., Montpellier, France 12-18 July 1998 ISSN: 0379-6779 the whole document -----	1,2,4-6, 9-12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 03/01062

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5599899	A	04-02-1997	WO 9512628 A1	11-05-1995
			US 5597890 A	28-01-1997
			US 5726282 A	10-03-1998
			US 5814833 A	29-09-1998
			US 5959070 A	28-09-1999
<hr/>				
WO 9415368	A	07-07-1994	AU 5843894 A	19-07-1994
			CA 2152922 A1	07-07-1994
			EP 0677208 A1	18-10-1995
			FI 953212 A	29-06-1995
			JP 8505167 T	04-06-1996
			WO 9415368 A1	07-07-1994
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GB 2346148	A	02-08-2000	NONE	
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